

WHAT IS CLAIMED IS:

1. A goggle comprising:

a front lens,

a frame having a top section, side sections and a bottom section for supporting the front lens in spaced relation in front of a wearer's face to define an interior space,

a front facing vent located in a forwardly facing portion of the frame to input exterior air moving relatively towards the front lens,

a channel located in the frame between the front facing vent and the interior space to direct the exterior air from the front facing vent to the interior space,

disbursing means associated with the channel for dispersing the exterior air across a greater area than the front facing vent including towards an inside surface of the front lens, and

an outlet vent located in the frame for allowing air from the interior space to exit the goggle.

2. The goggle of claim 1 wherein

an outlet porous foam having a total porosity of a first characteristic covers the outlet vent and

the disbursing means includes an inlet porous foam having a total porosity of a different characteristic than the outlet porous foam and located within the

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the front

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disbursing means in-
curred in the chan-
ge and partly forw-

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2 8. The goggle of claim 5 wherein the disbursing means further includes an inlet porous foam located in the channel between the front facing vent and the rear wall.

a, 8. 2 The goggle of claim 8 including an outlet porous foam located across the outlet vent and having a total porosity of different characteristic than the inlet porous foam.

8 10. 2 The goggle of claim 1 wherein the front facing vent has an inlet opening in the frame and spaced therefrom an exit opening in the frame which is contiguous with the channel, the inlet opening being of greater area than a reduced area of the exit opening so as to increase the velocity of the exterior air while moving through the front facing vent.

a, 9 11. 2 The goggle of claim 10 wherein the ^{first} reduced area is at least 50% smaller than the ^{second} greater area of the inlet opening.

10 12. 2 The goggle of claim 10 wherein the frame includes surrounding walls from the inlet opening to the exit opening in order to define the front facing vent, at least certain of the surrounding walls being slanted with respect to frontal exterior air moving directly towards the front lens so as to deflect sideways at least portions of the frontal exterior air as it is directed into the channel.

a 13. The goggle of claim ¹²⁸ 1 wherein the top section of the frame is formed by a
2 solid surface which lacks any openings into the frame.

14. The goggle of claim ¹² 13 wherein the solid surface includes a smooth helmet
2 mating section for use when the goggle is worn in conjunction with a helmet.

a 15. The goggle of claim ¹³ 1 including a plurality of front facing vents located along
2 an elongated region of the forwardly facing portion of the frame, and the
channel is elongated and open throughout its length so that exterior air from
the plurality of front facing vents will enter the open elongated channel and
flow into the interior space.

14 16. The goggle of claim ¹³ 15 wherein the outlet vent includes at least first and
2 second outlet vents located in the bottom section of the frame, the elongated
region is located in the top section of the frame and the open elongated
chamber is located in the top section of the frame so that exterior air enters
the top section of the frame and flows downwardly through the interior space
6 to exit at the bottom section of the frame.

15 17. The goggle of claim ¹³ 15 including a first plurality of front facing vents located
2 along a first elongated region spanning one side of the frame and a second
plurality of front facing vents located along a second elongated region
4 spanning a different side of the frame, and the elongated channel spans the

first and second elongated regions to form an open air chamber which spans
the length of the frame.

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^{11a}
~~18~~. A goggle comprising:

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a front lens,

a frame having surrounding sections for supporting the front lens in spaced
relation in front of a wearer's face to define an interior space,

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a plurality of front facing air scoops spaced across a forwardly facing portion
of the frame to input a large volume of exterior air moving relatively
towards the front lens,

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dispersing means located in the frame between the plurality of front facing air
scoops and the interior space for substantially reducing the large volume of
exterior air and dispersing the exterior air into the interior space, and
an outlet vent located in the frame for allowing air from the interior space to
exit the goggle.

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~~19~~. The goggle of claim ^{11a}~~18~~ where at least certain of the front facing air scoops
have an opening dimension of greater than 3 mm.

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¹⁸
~~20~~. The goggle of claim ^{11a}~~18~~ where at least certain of the front facing air scoops
have an opening dimension of greater than 10 mm.

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21. The goggle of claim ~~18~~¹⁶ wherein at least certain of the front facing air scoops
have an elongated shape with a major axis of longer dimension and a minor
axis of shorter dimension, with the major axis being at least twice as long as
the minor axis.

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22. The goggle of claim ~~21~~¹⁹ wherein the major axis of said certain of the front
facing air scoops is greater than 10 mm and the minor axis is greater than 2
mm and forms a substantially elongated shape.

23. The goggle of claim 18 wherein at least certain of the front facing air scoops
have an inlet opening in the forwardly facing portion of the frame and spaced
therefrom an exit opening in the frame which is contiguous with the dispersing
means, the inlet opening having an area of substantially greater size than the
exit opening area to thereby increase the velocity of the exterior air as it
moves through said certain front facing air scoops.

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24. The goggle of claim ~~23~~¹⁶ wherein the inlet opening area is at least twice the size
of the exit opening area.

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25. The goggle of claim ~~23~~¹⁸ wherein the frame includes surrounding walls
extending from the inlet opening to the exit opening, at least some of the
surrounding walls being slanted with respect to frontal exterior air moving

4 directly towards the front lens so as to deflect sideways at least portions of
the frontal exterior air as it moves through the certain front facing air scoops.

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26. The goggle of claim ¹⁶~~18~~ wherein the dispersing means includes a deflector wall
2 spaced behind the plurality of front facing air scoops to deflect at least a
portion of the exterior air so as to have a forward component within the
4 interior space.

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27. The goggle of claim ²³~~26~~ wherein the deflector wall is curved toward the interior
space and forwardly toward the front lens in order to deflect at least the
portion of the exterior air with a forward component toward an inside surface
of the front lens.

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28. The goggle of claim ¹⁶~~18~~ wherein the dispersing means includes a first porous
foam having a total porosity of a first characteristic for substantially reducing
the large volume of exterior air and a second porous foam located across the
4 outlet vent and having a total porosity of different characteristic than the first
porous foam.

²⁶
29. The goggle of claim ²⁵~~28~~ wherein the total porosity of the first porous foam is at
2 least twice as dense as the total porosity of the second porous foam.

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30. A goggle comprising:

- 2 a front lens,
- 4 a frame having surrounding sections for supporting the front lens in spaced
- 6 relation in front of a wearer's face to define an interior space,
- 8 inlet air vents formed in the frame for admitting exterior air into the interior
- 10 space,
- 12 a first porous foam covering the inlet air vents and having a total porosity of a
- 14 first value which controls the amount of air flow through the first porous
- 16 foam,
- 18 outlet air vents formed in the frame for allowing air from the interior space to
- 20 exit the goggle,
- 22 a second porous foam different than the first porous foam and covering the
- 24 outlet air vents and having a total porosity of a second value substantially
- 26 different than the first value so that the amount of air flow through the
- 28 second porous foam is substantially different than through the first porous
- 30 foam.

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31. The goggle of claim 30 wherein the total porosity of one of the first and

- 2 second porous foams is at least twice as dense to air flow as the other of the
- 4 first and second porous foams.

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32. The goggle of claim 30 wherein one of the first and second porous foams is at

2 least twice as thick as the other of the first and second porous foams.

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33. The goggle of claim ²⁹~~32~~ wherein said one of the first and second porous foams
2 is more than four times thicker than the other of the first and second porous
foams.

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34. The goggle of claim ²⁷~~30~~ wherein the inlet air vents are located in a forwardly
2 facing portion of the frame to input exterior air moving relatively towards the
front lens, and the first value for the first porous foam is at least double the
4 second value for the second porous foam to thereby reduce the amount of air
flow through the forwardly facing inlet air vents compared to the air flow
through the outlet air vents.

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35. The goggle of claim ³¹~~34~~ including an open channel located in the frame
2 between the forwardly facing inlet air vents and the interior space and the first
porous foam is located within the channel to thereby disperse the exterior air
4 flowing into the interior space.

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36. The goggle of claim ³²~~35~~ wherein the open channel terminates in a deflector wall
2 which redirects the air with a forward component into the interior space.

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37. The goggle of claim ²⁷~~30~~ wherein the inlet air vents comprise a plurality of front
2 facing air scoops spaced across a forwardly facing portion of the frame to
input a large volume of exterior air moving relatively towards the front lens,
4 the first porous foam being located between the plurality of front facing air

scoops and the interior space, the first value of total porosity of the first
6 porous foam being substantially greater than the second value of total porosity
of the second porous foam.

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~~38~~. The goggle of claim ³⁴~~37~~ wherein at least certain of the front facing air scoops
2 have an elongated shape with a major axis of longer dimension and a minor
axis of shorter dimension, with the major axis being at least twice as long as
4 the minor axis.

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~~39~~. The goggle of claim ³⁷~~30~~ wherein the frame includes a channel contiguous with
the inlet air vents and open throughout its length to the interior space, and the
first porous foam is located within the channel so as to span all of the inlet air
vents.

³⁷
~~40~~. A goggle comprising:
2 a front lens,
a frame formed of flexible material having a top section, side sections and a
4 bottom section for supporting the front lens in spaced relation in front of a
wearer's face to define an interior space,
6 at least one of the side sections of the frame including a flexible retention bar
having curved walls defining a curved slot extending through the frame,

8 a stretchable strap for securing the goggle to a wearer's head and extending
into the curved slot so that the width of the strap extends in a curve within
10 the curved slot, and
securing means for securing the strap around the flexible retention bar so that
12 retention forces on the strap create varying loads across the width of the
curved slot to reduce distortion of the flexible frame.

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41. The goggle of claim 40 wherein the curved walls have a radius center located
2 within the front lens so as to define a generally concave curved slot with
respect to a center portion of the goggle.

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42. The goggle of claim 41 wherein the other of the side sections of the frame
2 include a second flexible retention bar having second curved walls defining a
second curved slot extending through the frame, second securing means for
4 securing the strap around the second flexible retention bar, the first named
curved slot and the second curved slot each being generally concave with their
6 respective radii located within center portions of the goggle.

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43. The goggle of claim 40 wherein the securing means comprises a plastic
2 retention member capable of having a curved shape which mates with the
curved slot and is locatable within the curved walls to prevent the strap from
4 pulling through the curved slot.

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44. The goggle of claim 43 wherein the plastic retention member is initially formed straight and is cold flow deformable when located within the curved walls so as to conform to the curved slot.

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45. The goggle of claim 44 wherein the plastic retention material is elongated and is formed of polyethylene material.

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46. The goggle of claim 43 wherein the plastic retention member is elongated and is initially formed with a curved shape, which mates with the curved walls of the curved slot.

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47. The goggle of claim 40 wherein the sections of the frame have a peripheral groove for mounting a replaceable front lens, the flexible frame being manipulable so that the replaceable front lens can be inserted into and removed from the peripheral groove, and the varying loads across the width of the curved slot serving to reduce distortion of the flexible frame to thereby assist in retaining the replaceable front lens within the peripheral groove.

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48. The goggle of claim 40 wherein the curved walls have a radius of about two inches or less with the radius center being located within an area of the front lens.

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~~49~~. The goggle of claim ⁴⁵~~48~~ wherein the maximum radius of the curved walls is
2 about one inch.

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